Space Weather Forecast

Issued on Monday, 21 November 2022 at 12:40 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight Chance of isolated G1/Minor Storms, mainly day 1 (21st), before reducing.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Low in the last 24 hrs, with the max an isolated Common-class flare at 21/0348 UTC. There are currently four numbered and one unnumbered sunspot regions on the visible disc. The Medium sunspot in the northwest continues to show a decaying trend as it approaches the limb. Of the four other sunspots, the largest remains in the southeast quadrant but is currently stable. The most notable growth has been observed in the northeast quadrant, with the Medium sunspot here has shown increased complexity. All other spots remain small and simple for now.

No Earth directed CMEs (Coronal Mass Ejections) were seen in available imagery.

Solar Wind / Geomagnetic Activity: Solar wind speeds were slow until around 20/1800 UTC, when an increase was observed into slightly elevated levels. The total magnetic field rose slowly from weak levels to occasionally moderate before trending back down. The north-south component was weak and predominately positive (northward) until around 20/1500 UTC, after which larger fluctuations were observed, with some brief moderate southward orientation. Geomagnetic activity was Quiet (Kp 0 to 2), to Unsettled (kp 3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to continue Low, with a slight chance for isolated Moderate flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs, however glancing interactions from passing CMEs are possible on day 2 (22nd).
Otherwise, coronal hole influence is expected through day 1 (21st) and into day 2 (22nd), with solar wind speeds potentially increasing further, although the peak magnitude is low confidence. Days 3 and 4 (23rd and 24th) should then see gradually waning coronal hole effects.
Geomagnetic activity is anticipated to be occasionally Unsettled on day 1 (2st) and into day 2 (22nd), with a chance of Active, and slight chance of an isolated G1/Minor Storm interval, due to coronal hole influence. Conditions should then ease to mostly Quiet conditions with isolated Unsettled intervals from day 3 (23rd).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	15	15	15	15
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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